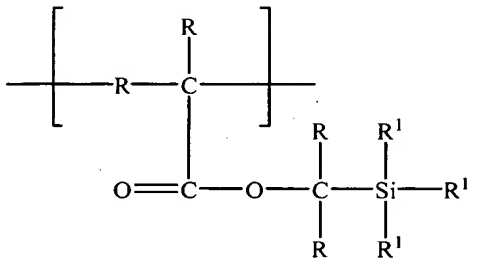
We Claim:

1. In a composition for use in microlithographic processes, wherein the composition comprises a polymer dissolved or dispersed in a solvent system, the improvement being that said polymer comprises recurring monomers having the formula



(I)

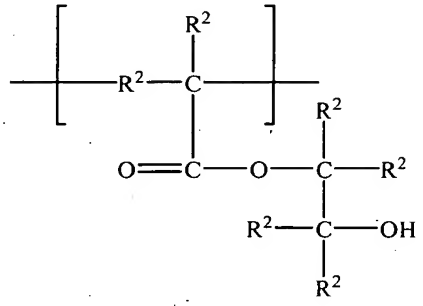
wherein:

each R is individually selected from the group consisting of hydrogen and alkyls; and

each R^1 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

2. The composition of claim 1, said polymer further comprising recurring monomers having an alcohol functionality.

3. The composition of claim 2, said polymer comprising recurring monomers having the formula



(II)

wherein each R^2 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

4. The composition of claim 3, wherein the molar ratio of (I) to (II) is from about 80:20 to about 50:50.

5. The composition of claim 1, said composition further comprising a cross-linking agent.

6. The composition of claim 5, wherein said cross-linking agent is selected from the group consisting of aminoplast cross-linking agents.

7. The composition of claim 5, said composition further comprising a catalyst.

8. The composition of claim 7, wherein said catalyst is an acid.

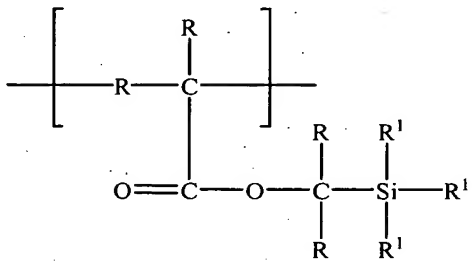
9. The composition of claim 8, wherein said composition comprises a weak acid and a strong acid.

10. The composition of claim 1, wherein said composition gives a spin bowl compatibility test result of at least about 90%.

11. A structure used in microlithographic processes, said structure comprising:

a substrate; and

a layer on said substrate, said layer formed from a composition comprising a polymer dissolved or dispersed in a solvent system, said polymer comprising recurring monomers having the formula



(I)

wherein:

each R is individually selected from the group consisting of hydrogen and alkyls; and

each R^1 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

12. The structure of claim 11, said structure further comprising an anti-reflective coating intermediate said substrate and said layer.

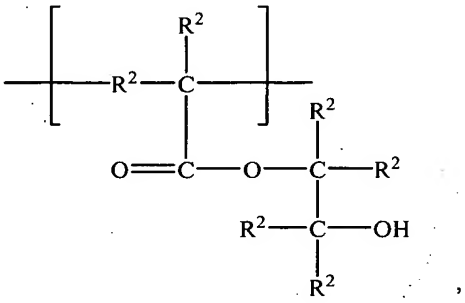
13. The structure of claim 11, said structure further comprising a photoresist adjacent said layer.

14. The structure of claim 12, said structure further comprising a photoresist adjacent said layer.

15. The structure of claim 11, wherein said substrate is selected from the group consisting of Si substrates, SiO_2 substrates, Si_3N_4 substrates, SiO_2 on silicon substrates, Si_3N_4 on silicon substrates, glass substrates, quartz substrates, ceramic substrates, semiconductor substrates, and metal substrates.

16. The structure of claim 11, said polymer further comprising recurring monomers having an alcohol functionality.

17. The structure of claim 16, said polymer comprising recurring monomers having the formula



(II)

wherein each R^2 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

18. The structure of claim 11, said composition further comprising a cross-linking agent.

19. The structure of claim 18, wherein said cross-linking agent is selected from the group consisting of aminoplast cross-linking agents.

20. The structure of claim 11, said composition further comprising an acid.

21. The structure of claim 20, wherein said composition comprises a weak acid and a strong acid.

22. The structure of claim 11, wherein said layer gives a spin bowl compatibility test result of at least about 90%.

23. The structure of claim 11, wherein said layer has a thickness of less than about 2,150 Å.

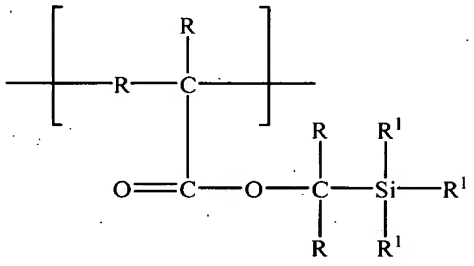
24. The structure of claim 13, wherein said photoresist has a thickness of less than about 200 nm.

25. The structure of claim 14, wherein said photoresist has a thickness of less than about 200 nm.

26. A method of forming a structure for use in microlithographic processes, said method comprising the steps of:

providing a substrate; and

forming a layer of a composition on the substrate, said composition comprising a polymer dissolved or dispersed in a solvent system, said polymer comprising recurring monomers having the formula



(I)

wherein:

each R is individually selected from the group consisting of hydrogen and alkyls; and

each R^1 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

27. The method of claim 26, further including the step of applying an anti-reflective coating to said substrate and wherein said layer forming step comprises applying the layer to said anti-reflective coating.

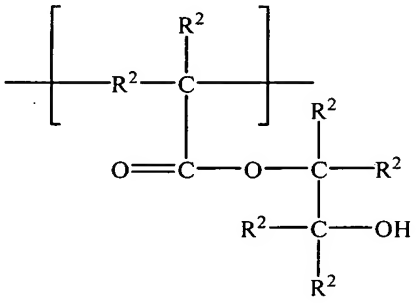
28. The method of claim 26, further including the step of applying a photoresist to said layer.

29. The method of claim 27, further including the step of applying a photoresist to said layer.

30. The method of claim 26, wherein said substrate is selected from the group consisting of Si substrates, SiO_2 substrates, Si_3N_4 substrates, SiO_2 on silicon substrates, Si_3N_4 on silicon substrates, glass substrates, quartz substrates, ceramic substrates, semiconductor substrates, and metal substrates.

31. The method of claim 26, said polymer further comprising recurring monomers having an alcohol functionality.

32. The method of claim 31, said polymer comprising recurring monomers having the formula



(II)

wherein each R^2 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

33. The method of claim 26, said composition further comprising a cross-linking agent.

34. The method of claim 33, wherein said cross-linking agent is selected from the group consisting of aminoplast cross-linking agents.

35. The method of claim 26, said composition further comprising an acid.

36. The method of claim 35, wherein said composition comprises a weak acid and a strong acid.

37. The method of claim 26, wherein said layer gives a spin bowl compatibility test result of at least about 90%.

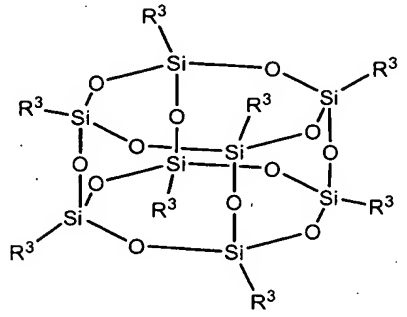
38. The method of claim 26, further comprising the step of curing said layer, and wherein said cured layer has a thickness of less than about 2,150 Å.

39. The method of claim 28, further including the step of drying said photoresist, wherein said dried photoresist has a thickness of less than about 200 nm.

40. The method of claim 29, further including the step of drying said photoresist, wherein said dried photoresist has a thickness of less than about 200 nm.

41. In a composition for use in microlithographic processes, wherein the composition comprises a constituent dissolved or dispersed in a solvent system, said constituent being selected from the group consisting of polymers, compounds, and mixtures thereof, the improvement being that said polymer includes recurring monomers comprising a polyhedral oligomeric silsesquioxane and that said compound comprises a polyhedral oligomeric silsesquioxane.

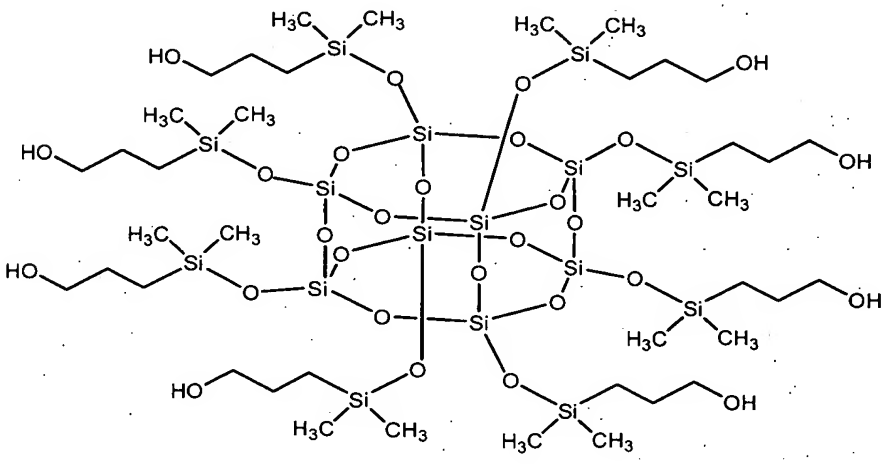
42. The composition of claim 41, wherein said constituent has the formula



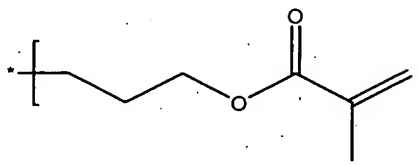
(III)

wherein each R^3 is individually selected from the group consisting of hydrogen, alkyls, aryls, hydroxypropyldimethylsilyloxy, and olefinic moieties.

43. The composition of claim 42, wherein said constituent is a compound having the formula



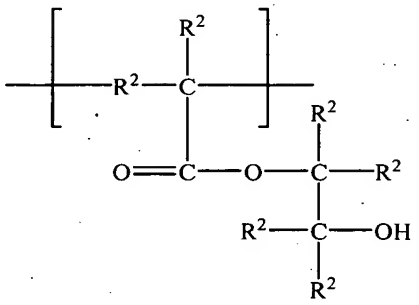
44. The composition of claim 42, wherein at least one R^3 is



where "*" designates Si on (III).

45. The composition of claim 41, said polymer further comprising recurring monomers having an alcohol functionality.

46. The composition of claim 45, said polymer comprising recurring monomers having the formula



(IV)

wherein each R^2 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

47. The composition of claim 46, wherein the molar ratio of polyhedral oligomeric silsesquioxane to (IV) is from about 15:85 to about 30:70.

48. The composition of claim 41, said composition further comprising an ingredient selected from the group consisting of cross-linking agents, catalysts, and mixtures thereof.

49. The composition of claim 48, wherein said ingredient is a cross-linking agent selected from the group consisting of aminoplast cross-linking agents.

50. The composition of claim 48, wherein said composition comprises a catalyst.

51. The composition of claim 50, wherein said composition comprises a weak acid and a strong acid.

52. The composition of claim 41, wherein said composition gives a spin bowl compatibility test result of at least about 90%.

53. A structure used in microlithographic processes, said structure comprising:

a substrate; and

a layer on said substrate, said layer formed from a composition comprising a constituent dissolved or dispersed in a solvent system, said constituent being selected from the group consisting of polymers, compounds, and mixtures thereof, the improvement being that said polymer includes recurring monomers comprising a polyhedral oligomeric silsesquioxane and said compound comprises a polyhedral oligomeric silsesquioxane.

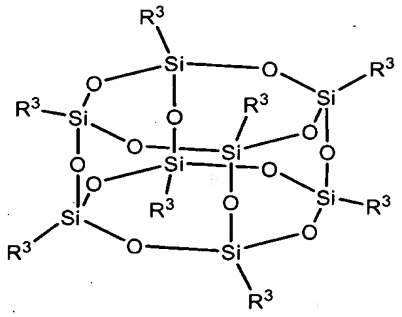
54. The structure of claim 53, said structure further comprising an anti-reflective coating intermediate said substrate and said layer.

55. The structure of claim 53, said structure further comprising a photoresist adjacent said layer.

56. The structure of claim 54, said structure further comprising a photoresist adjacent said layer.

57. The structure of claim 53, wherein said substrate is selected from the group consisting of Si substrates, SiO_2 substrates, Si_3N_4 substrates, SiO_2 on silicon substrates, Si_3N_4 on silicon substrates, glass substrates, quartz substrates, ceramic substrates, semiconductor substrates, and metal substrates.

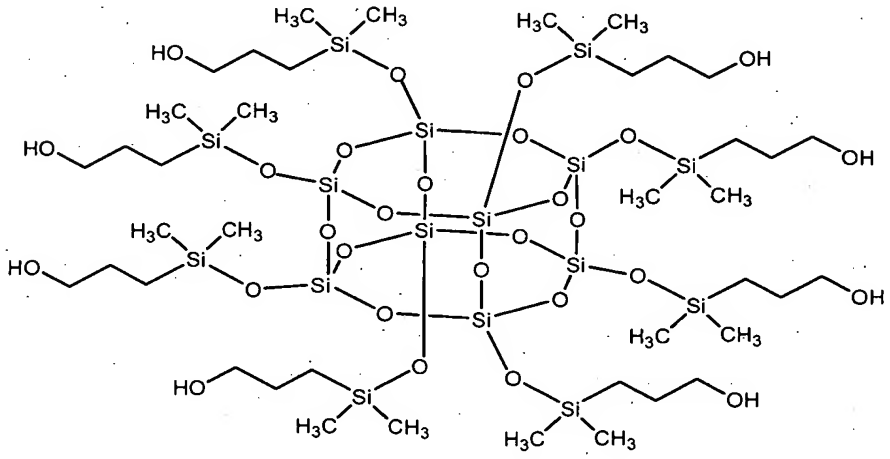
58. The structure of claim 53, wherein said constituent has the formula



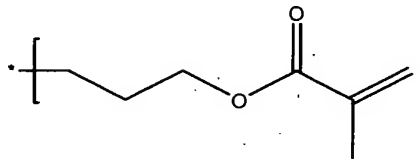
(III)

wherein each R^3 is individually selected from the group consisting of hydrogen, alkyls, aryls, hydroxypropyldimethylsilyloxy, and olefinic moieties.

59. The structure of claim 58, wherein said constituent is a compound having the formula



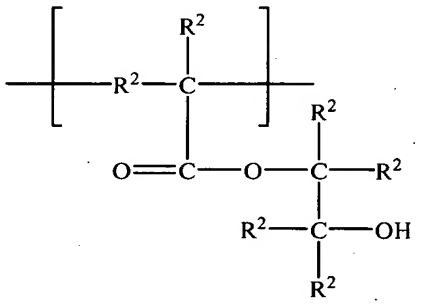
60. The structure of claim 58, wherein at least one R^3 is



where "*" designates Si on (III).

61. The structure of claim 53, said polymer further comprising recurring monomers having an alcohol functionality.

62. The structure of claim 61, said polymer comprising recurring monomers having the formula



(II)

wherein each R^2 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

63. The structure of claim 53, said composition further comprising an ingredient selected from the group consisting of cross-linking agents, catalysts, and mixtures thereof.

64. The structure of claim 63, wherein said ingredient is a cross-linking agent selected from the group consisting of aminoplast cross-linking agents.

65. The structure of claim 63, wherein said composition comprises a catalyst.

66. The structure of claim 65, wherein said composition comprises a weak acid and a strong acid.

67. The structure of claim 53, wherein said layer gives a spin bowl compatibility test result of at least about 90%.

68. The structure of claim 53, wherein said layer has a thickness of less than about 2,150 Å.

69. The structure of claim 55, wherein said photoresist has a thickness of less than about 200 nm.

70. The structure of claim 56, wherein said photoresist has a thickness of less than about 200 nm.

71. A method of forming a structure for use in microlithographic processes, said method comprising the steps of:

providing a substrate; and

forming a layer of a composition on the substrate, said composition comprising a constituent dissolved or dispersed in a solvent system, said constituent being selected from the group consisting of polymers, compounds, and mixtures thereof, the improvement being that said polymer includes recurring monomers comprising a polyhedral oligomeric silsesquioxane and that said compound comprises a polyhedral oligomeric silsesquioxane.

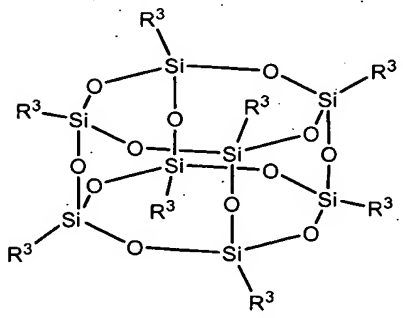
72. The method of claim 71, further including the step of applying an anti-reflective coating to said substrate, and wherein said layer forming step comprises applying the layer to said anti-reflective coating.

73. The method of claim 71, further including the step of applying a photoresist to said layer.

74. The method of claim 72, further including the step of applying a photoresist to said layer.

75. The method of claim 71, wherein said substrate is selected from the group consisting of Si substrates, SiO_2 substrates, Si_3N_4 substrates, SiO_2 on silicon substrates, Si_3N_4 on silicon substrates, glass substrates, quartz substrates, ceramic substrates, semiconductor substrates, and metal substrates.

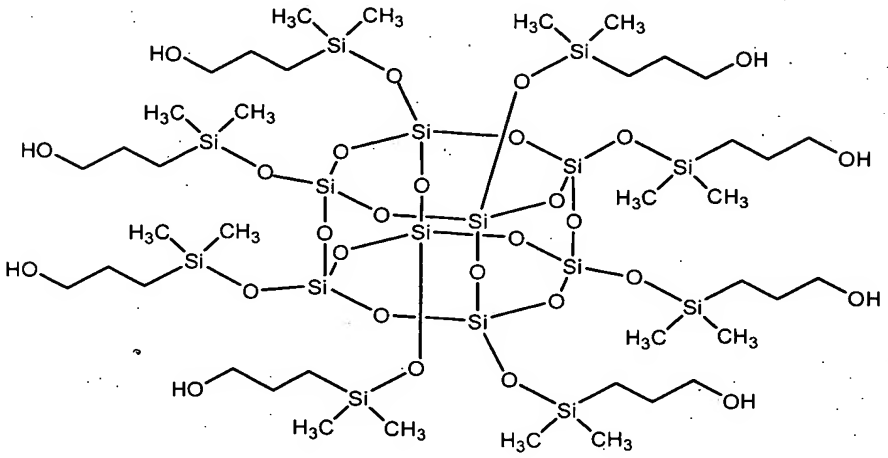
76. The method of claim 71, wherein said constituent has the formula



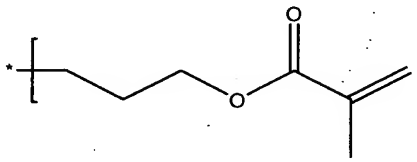
(III)

wherein each R^3 is individually selected from the group consisting of hydrogen, alkyls, aryls, hydroxypropyldimethylsilyloxy, and olefinic moieties.

77. The method of claim 76, wherein said constituent is a compound having the formula



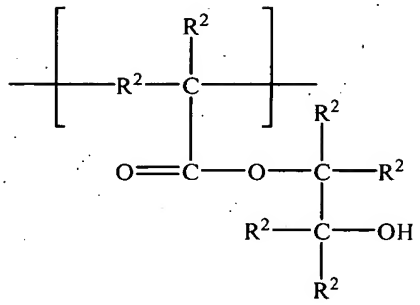
78. The method of claim 76, wherein at least one R^3 is



where "*" designates Si on (III).

79. The method of claim 71, said polymer further comprising recurring monomers having an alcohol functionality.

80. The method of claim 79, said polymer comprising recurring monomers having the formula



(II)

wherein each R^2 is individually selected from the group consisting of hydrogen, alkyls, and aryls.

81. The method of claim 71, said composition further comprising an ingredient selected from the group consisting of cross-linking agents, catalysts, and mixtures thereof.

82. The method of claim 81, wherein said ingredient is a cross-linking agent selected from the group consisting of aminoplast cross-linking agents.

83. The method of claim 81, wherein said composition comprises a catalyst.

84. The method of claim 83, wherein said composition comprises a weak acid and a strong acid.

85. The method of claim 71, wherein said layer gives a spin bowl compatibility test result of at least about 90%.

86. The method of claim 71, further comprising the step of curing said layer, and wherein said cured layer has a thickness of less than about 2,150 Å.

87. The method of claim 73, further including the step of drying said photoresist, and wherein said dried photoresist has a thickness of less than about 200 nm.

88. The method of claim 74, further including the step of drying said photoresist, and wherein said dried photoresist has a thickness of less than about 200 nm.